State of Utah

Department of
Environmental Quality

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Executive Director

DIVISION OF AIR QUALITY
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DAQE-IN0103460032-08

July 23, 2008

Rohan McGowan-Jackson
Manager, HSE & SD
Kennecott Utah Copper Corporation
P.O. Box 6001
Magna, Utah 84044-6001

Dear Mr. McGowan-Jackson:

Re: Intent to Approve: New Molybdenum Autoclave Process Plant
Salt Lake County – CDS A; NA; NSPS; Title V Major
Project Code: N010346-0032

The attached document is the Intent to Approve for the above-referenced project. The Intent to Approve is subject to public review. Any comments received shall be considered before an Approval Order is issued.

Future correspondence on this Intent to Approve should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any questions you may have on this project to Mr. Nando Meli. He may be reached at (801) 536-4052.

Sincerely,

Ty L. Howard, Manager
New Source Review Section

TLH:NM:kw

cc: Salt Lake Valley Health Department
Mike Owens, EPA Region VIII

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

INTENT TO APPROVE: New Molybdenum Autoclave Process Plant

Prepared By: Nando Meli, Engineer
(801) 536-4052
Email: nmeli@utah.gov

INTENT TO APPROVE NUMBER

DAQE-IN0103460032-08

Date: July 23, 2008

Kennecott Utah Copper Corporation

Source Contact
Chris Kaiser
(801) 569-7427

M. Cheryl Heying
Executive Secretary
Utah Air Quality Board

Abstract

Kennecott Utah Copper Corporation has requested approval for a proposed Molybdenum Autoclave Process in Magna, located in Salt Lake County, Utah. In the copper ore, molybdenum exists as molybdenum disulfide (MoS_2). The Copperton Concentrator produces bulk concentrate which consists of copper, molybdenum, gold, and silver among other metals. The molybdenum concentrate is separated from the bulk concentrate using differential flotation. Currently, Kennecott Utah Copper Corporation sends the molybdenum concentrate to foreign roasters to produce molybdenum trioxide (MoO_3). Kennecott Utah Copper Corporation has requested approval to add the Molybdenum Autoclave Process, which will process MoS_2 into MoO_3. The project will be implemented in two phases. Currently Kennecott Utah Copper Corporation is requesting approval for the construction and operation of Phase 1 of the Molybdenum Autoclave Process project. Because the Molybdenum Autoclave Process will be a new and discrete operating facility, Kennecott Utah Copper Corporation is requesting a separate Approval Order for the Molybdenum Autoclave Process project. It will be included in the Smelter and refinery Title V permit. Kennecott Utah Copper Corporation will request approval for construction and operation of Phase 2 of the Molybdenum Autoclave Process project at a later date.

Salt Lake County is a Non-attainment area of the National Ambient Air Quality Standards (NAAQS) for PM_{10} and SO_2, and is a Maintenance area for Ozone. New Source Performance Standards (NSPS) apply to this source. Title V of the 1990 Clean Air Act applies to this source. The Title V operating permit for this source shall be amended prior to the operation of the requested modifications. Emissions associated with Phase 1 of the Molybdenum Autoclave Process project have been calculated as follows: 8.96 tons per year (tpy) of NO_x, 9.91 tpy of CO, 10.44 tpy of PM_{10}, 4.49 tpy of SO_2, 1.42 tpy of VOC, 1.18 tpy of a single HAP (ethane), and 4.40 tpy of combined total HAPs, making the MAP project a new minor source of emissions.

The Notice of Intent (NOI) for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Administrative Code Rule 307 (UAC R307). Air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

A 30-day public comment period will be held in accordance with UAC R307-401-7. A notice of intent to approve will be published in the Salt Lake Tribune and Deseret News on July 28, 2008. During the public comment period, the proposal and the evaluation of its impact on air quality will be available for the public to review and comment. If anyone so requests a public hearing, it will be held in accordance with UAC R307-401-7. The hearing will be held as close as practicable to the location of the source. Any comments received during the public comment period and/or the hearing will be evaluated.

Please review the proposed AO conditions during this period and make any comments you may have. The proposed conditions of the AO may be changed as a result of the comments received. Unless changed, the AO will be based upon the following conditions:

General Conditions:

1. This AO applies to the following company:

Site Office	Corporate Office Location
Kennecott Utah Copper Molybdenum Autoclave Plant (MAP) 11500 West 2100 South Utah Highway 201 Magna, Utah 84044 (four miles west of Magna, Utah)	Kennecott Utah Copper Corporation 8362 West 10200 South Bingham Canyon, Utah 84006 P. O. Box 6001 Magna, Utah 84044-6001
Phone Number: (801) 569-6407	(801) 569-6000
Fax Number: (801) 569-7719	(801) 569-7192

The equipment listed in this AO shall be operated at the following location:

11500 West 2100 South, Utah Highway 201, Magna, Utah
(four miles west of Magna)

Universal Transverse Mercator (UTM) Coordinate System: UTM Datum NAD27
4,508.0 kilometers Northing, 400.0 kilometers Easting, Zone 12

2. All definitions, terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code (UAC) Rule 307 (R307) and Title 40 of the Code of Federal Regulations (40 CFR). Unless noted otherwise, references cited in these AO conditions refer to those rules.

3. The limits set forth in this AO shall not be exceeded without prior approval in accordance with R307-401.

4. Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved in accordance with R307-401.

5. All records referenced in this AO or in applicable NSPS standards, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or Executive Secretary's representative upon request. Records shall be kept for the following minimum periods:

A.	Emission inventories	Five years from the due date of each emission statement or until the next inventory is due, whichever is longer.
B.	All other records	Five years

6. Kennecott Utah Copper (KUC) shall install the Molybdenum Autoclave Process (MAP) and shall conduct its operations of the MAP in accordance with the terms and conditions of this AO, which was written pursuant to Kennecott's Notice of Intent (NOI) submitted

to the Division of Air Quality (DAQ) on January 11, 2008, and additional information submitted to DAQ on April 4, 2008, June 6, 2008, June 30, 2008, and July 7, 2008.

7. The approved installations shall consist of the following equipment or equivalent*:

A. Two MAP Steam Boilers

1)	Maximum heat input per boiler	25.1 x 10^6 BTU/hour (MMBTU/hr)
2)	Fuel type	Natural Gas
3)	Maximum NO_x burner rating	30 parts per million (ppm)

B. Emergency Generator

1)	Maximum generator rating	1,000 kilowatts (kW)
2)	Fuel Type	#1 diesel

C. Wet Cooling Tower with Drift Eliminator

1)	Water flow	16,000 gallons per minute (gpm)

D. Autoclave Venturi Scrubber

1)	Type	Two-stage Venturi
2)	Minimum pressure drop	38” water column (wc)
3)	Manufacturer rated minimum control efficiency	95%**

E. Briquette Dryer

1)	Maximum heat input	1.85 MMBTU/hr
2)	Fuel type	Natural Gas
3)	Maximum NO_x burner rating	45 ppm

F. Briquette Dryer, ADM Dryer and Packaging Area Dust Collector

1)	Minimum pressure drop per collector	4.0” wc
2)	Manufacturer rated minimum control efficiency	99%**

G. Silos with Bin Vents

1)	Manufacturer rated minimum control efficiency	99%**

H. Ammonia Scrubber

1)	Scrubber type	Packed adsorption tower

2)	Minimum reagent recirculation rate	60 gallons per minute at 15-20 psi
3)	Minimum packing depth	4.5 ft**
4)	Maximum pressure drop	1.5" wc**
5)	Manufacturer rated maximum concentration to atmosphere	50 parts per million by volume (ppmv) NH_3

I. Sulfuric Acid Scrubber

1)	Scrubber type	Packed adsorption tower
2)	Minimum reagent recirculation rate	30 gpm at 15-20 psi
3)	Minimum packing depth	4 ft**
4)	Maximum pressure drop	3" wc**
5)	Manufacturer rated maximum concentration to atmosphere	5 ppmv H_2SO_4

J. Hydrogen Sulfide Scrubber

1)	Scrubber type	Packed adsorption tower
2)	Minimum reagent recirculation rate	50 gpm at 15-20 psi
3)	Minimum packing depth	10 ft**
4)	Maximum pressure drop	2" wc**
5)	Manufacturer rated maximum concentration to atmosphere	5 ppmv H_2S

* Equivalency shall be determined by the Executive Secretary.
** These equipment specifications are listed for informational purposes only.

8. The autoclave venturi scrubber shall control process streams from the autoclave circuit. This two-stage scrubber shall be sized to handle at least 24,000 acfm. All exhaust air from the autoclave processes shall be routed through the two-stage scrubber before being vented to the atmosphere.

9. The Briquette Dryer, ADM Dryer and Packaging Area Dust Collector shall control process streams from the Briquette Dryer, ADM Dryer and Packaging Area. These baghouses shall be sized to handle at least 18,400 acfm. All exhaust air from the Briquette Dryer, ADM Dryer and Packaging Area shall be routed through their respective baghouse before being vented to the atmosphere.

10. The Ammonia wet scrubber shall control process streams from the purification process and the crystallization process. This wet scrubber shall be sized to handle at least 6,300 acfm. All exhaust air from the purification and crystallization processes shall be routed through the wet scrubber before being vented to the atmosphere.

11. The sulfuric acid wet scrubber shall control process streams from the alkali and acid leach tanks. This wet scrubber shall be sized to handle at least 4,000 acfm. All exhaust air from the alkali and acid leach tanks shall be routed through the wet scrubber before being vented to the atmosphere.

12. The hydrogen sulfide wet scrubber shall control process streams from the Copper Precipitation Tank and Thickener and NaHS Storage Tank. This wet scrubber shall be sized to handle at least 1,700 acfm. All exhaust air from the NAHS storage tank, copper precipitation tanks and thickner shall be routed through the wet scrubber before being vented to the atmosphere.

13. KUCC shall notify the Executive Secretary in writing when the installation of the equipment listed in Condition #7 has been completed and is operational. To insure proper credit when notifying the Executive Secretary, send your correspondence to the Executive Secretary, attn: Compliance Section.

    AOs issued by the executive secretary in accordance with the provisions of R307-401 will be reviewed eighteen months after the date of issuance to determine the status of construction, installation, modification, relocation or establishment. In eighteen months from the date of this AO, the Executive Secretary shall be notified in writing on the status of the plant construction and installation of the equipment. If a continuous program of construction, installation, modification, relocation or establishment is not proceeding, the executive secretary may revoke the AO.

Limitations and Tests Procedures

14. Visible emissions from the following emission points shall not exceed the following values:

    A. All baghouses - 10% opacity
    B. All boilers and dryers - 10% opacity
    C. All scrubbers – 15% opacity
    D. All diesel engines - 20% opacity
    E. All other points - 20% opacity

    Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

    For sources that are subject to NSPS, opacity shall be determined by conducting observations in accordance with 40 CFR 60.11(b) and 40 CFR 60, Appendix A, Method 9.

15. The of operation on the 1,000 kW emergency generator shall not exceed 300 hours per rolling 12-month period

    To determine compliance with a rolling 12-month total, KUC shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. An hour meter shall be installed on the generator and the hours of operation shall be

maintained in an operations log which shall be maintained the supervisor. Hours of operation shall be kept on a monthly basis.

16. Emergency generators shall be used for electricity producing operation only during the periods when electric power from the public utilities is interrupted, or for regular maintenance of the generators. Records documenting generator usage shall be kept in a log and they shall show the date the generator was used, the duration in hours of the generator usage, and the reason for each generator usage.

Monitoring - General Process

17. A manometer or magnehelic pressure gauge shall be installed to measure the differential pressure across the scrubbers and dust collector. The following operating parameters shall be maintained within the indicated ranges:

A. Autoclave Scrubber.

The pressure drop shall not be less than 38" wc.

B. Ammonia Scrubber

The liquid flow rate shall not be less than 60 gpm at 15-20 psi.

C. Sulfuric Acid Scrubber

The liquid flow rate shall not be less than 30 gpm at 15-20 psi.

D. Hydrogen Sulfide Scrubber

The liquid flow rate shall not be less than 50 gpm at 15-20 psi.

E. Briquette Dryer, ADM Dryer and Packaging Area Dust Collector

The pressure drop for each baghouse shall not be less than 4.0" wc.

They shall be monitored with equipment located such that an inspector/operator can safely read the output any time. The readings shall be accurate to within the following ranges:

F. Pressure drop - Plus or minus 0.25" wc

G. Liquid flow rate - Plus or minus 5 gpm

All instruments shall be calibrated according to the manufactures instructions at least once every 12 months. Intermittent recording of the reading is required on a weekly basis.

Fuels

18. KUCC shall only use low sulfur or #1 diesel fuel in the emergency generator. The sulfur content of any diesel burned shall not exceed 0.05 percent by weight for diesel fuels consumed in the emergency generator.

    The sulfur content shall be determined by ASTM Method D-4294-89 or approved equivalent. Certification of fuel burned shall be either by KUCC's own testing or test reports from the fuel marketer.

Federal Limitations and Requirements

19. In addition to the requirements of this AO, all applicable provisions of 40 CFR 60, New Source Performance Standards (NSPS) Subpart A, 40 CFR 60.1 to 60.18 (General Provisions), Subpart Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) and Subpart IIII, 40 CFR 60.4200 to 60.4219 (Standards of Performance for Stationary Compression Ignition Internal Combustion Ignition) apply to this installation.

Records & Miscellaneous

20. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded.

21. The owner/operator shall comply with R307-150 Series. Inventories, Testing and Monitoring.

22. The owner/operator shall comply with R307-107. General Requirements: Unavoidable Breakdowns.

The Executive Secretary shall be notified in writing if the company is sold or changes its name.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including R307.

A copy of the rules, regulations and/or attachments addressed in this AO may be obtained by contacting the DAQ. The Utah Administrative Code R307 rules used by DAQ, the NOI guide, and other air quality documents and forms may also be obtained on the Internet at the following web site:

http://www.airquality.utah.gov

The annual emission estimations below include point source, fugitive emissions and fugitive dust, and do not include road dust, tail pipe emissions and grandfathered emissions. These emissions are for the purpose of determining the applicability of Prevention of Significant Deterioration, non-attainment area, maintenance area, and Title V source requirements of the R307. They are not to be used for determining compliance.

The Potential To Emit (PTE) emissions for the Kennecott Molybdenum Plant are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	10.44
B.	SO_2	4.49
C.	NO_x	8.96
D.	CO	9.91
E.	VOC	1.42
F.	HAPs	
	1,2-Epoxybutane	0.816
	Ethane	1.18
	Formaldehyde	0.029
	Hexane	0.699
	Pentane	1.01
	Zinc	0.0113
	Miscellaneous HAPs (each less than 0.0017 tpy)	
	Total HAPs	4.40
G.	Sulfuric Acidic	0.62
H.	Hydrogen Sulfide	0.16

Sincerely,

Ty L. Howard, Manager
New Source Review Section